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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0030979 A1**
(43) **Pub. Date: Feb. 12, 2004**(54) **PRACTICAL CODING AND METRIC
CALCULATION FOR THE LATTICE
INTERFERED CHANNEL**(75) **Inventors: Yaron Shany, Kfar Saba (IL); David
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KLUTH, P.A.****P.O. BOX 2938****MINNEAPOLIS, MN 55402 (US)**(73) **Assignee: D.S.P.C. TECHNOLOGIES LTD.**(21) **Appl. No.: 10/214,630**(22) **Filed: Aug. 7, 2002****Publication Classification**(51) **Int. Cl.⁷ H03M 13/00**(52) **U.S. Cl. 714/752**(57) **ABSTRACT**

A communication system includes a lattice interfered channel to transmit data from a transmitter to a receiver. In one embodiment, an encoding-modulation scheme having a rich signal constellation is used to encode data at a total rate of 0.7 bit/dimension or less before transmission into the lattice interfered channel. In another embodiment, decoding metric approximation techniques are used to process signals received from the lattice interfered channel. In still another embodiment, multilevel code (MLC) decoding is used to jointly decode an error correction code component and a lattice/MLC component of a received signal. The error correction code component may then be extracted from the decoded signal.

